

CLAIMS

What is claimed is:

1. A tunable filter comprising:

a fixed substrate having an upper surface;

5 a first plate on the upper surface of said fixed substrate;

a movable substrate having a lower surface opposing the upper surface of the fixed substrate;

a second plate on the lower surface of the movable substrate, wherein the first plate and second plate define a capacitor having a capacitor gap, wherein the capacitor gap is maintained in

10 a vacuum; and

a driver having a first end and a second end, wherein the first end of the driver is mounted on the fixed substrate and the second end of the driver is attached to the movable substrate, and wherein a length change of the driver changes the capacitor gap, affecting a frequency response of said tunable filter.

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2. The tunable filter of claim 1, wherein the movable substrate comprises a high temperature superconductor.

3. The tunable filter of claim 1, wherein the first plate comprises a high temperature
20 superconductor.

4. The tunable filter of claim 1, wherein the second plate comprises a high temperature superconductor.

5. The tunable filter of claim 1, wherein each of the movable substrate, the first plate,
5 and the second plate comprises a high temperature superconductor.

6. A tunable filter comprising:

a fixed substrate having an upper surface;

a first plate on the upper surface of the fixed substrate;

10 a second plate on the upper surface of the fixed substrate;

a movable substrate having a lower surface opposing the upper surface of the fixed substrate;

a floating plate on the lower surface of the movable substrate, wherein the first plate, the second plate and the floating plate define a capacitor having a capacitor gap, wherein the capacitor
15 gap is maintained in a vacuum; and

a driver having a first end and a second end, wherein the first end of the driver is mounted on the fixed substrate and the second end of the driver is attached to the movable substrate, and wherein a length change of the driver changes the capacitor gap, affecting a frequency response of said tunable filter.

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7. The tunable filter of claim 6, wherein the movable substrate comprises a high temperature superconductor.

8. The tunable filter of claim 6, wherein the first and second plates comprise a high temperature superconductor.

9. The tunable filter of claim 6, wherein the floating plate comprises a high temperature superconductor.

10. The tunable filter of claim 6, wherein each of the first plate, second plate, and floating plate comprises a high temperature superconductor.

11. The tunable filter of claim 6, wherein the first and second plates comprise a low-loss metal.

12. The tunable filter of claim 6, wherein the floating plate comprises a low-loss metal.

13. The tunable filter of claim 6, further comprising an inductor coupled to the first plate and the second plate.